Opportunities, Challenges, and Future Directions of Generative Artificial Intelligence in Medical Education: Scoping Review

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Abstract

Background Generative artificial intelligence (AI) technologies are increasingly being utilized across various fields, with considerable interest and concern regarding their potential application in medical education. These technologies, such as Chat GPT and Bard, can generate new content and have a wide range of possible applications. Objective This study aimed to synthesize the potential opportunities and limitations of generative AI in medical education. It sought to identify prevalent themes within recent literature regarding potential applications and challenges of generative AI in medical education and use these to guide future areas for exploration. Methods We conducted a scoping review, following the framework by Arksey and O'Malley, of English language articles published from 2022 onward that discussed generative AI in the context of medical education. A literature search was performed using PubMed, Web of Science, and Google Scholar databases. We screened articles for inclusion, extracted data from relevant studies, and completed a quantitative and qualitative synthesis of the data. Results Thematic analysis revealed diverse potential applications for generative AI in medical education, including self-directed learning, simulation scenarios, and writing assistance. However, the literature also highlighted significant challenges, such as issues with academic integrity, data accuracy, and potential detriments to learning. Based on these themes and the current state of the literature, we propose the following 3 key areas for investigation: developing learners’ skills to evaluate AI critically, rethinking assessment methodology, and studying human-AI interactions. Conclusions The integration of generative AI in medical education presents exciting opportunities, alongside considerable challenges. There is a need to develop new skills and competencies related to AI as well as thoughtful, nuanced approaches to examine the growing use of generative AI in medical education.